


applicant respectfully requests that the Examiner contact the undersigned to schedule a telephone Examiner Interview before any further actions on the merits.

The applicant will now address each of the issues raised in the outstanding Office Action.

Rejections under 35 U.S.C. § 103

Claims 1, 2 and 8 stand rejected under 35 U.S.C. § 103 as being unpatentable over U.S. Patent No. 4,882,524 (hereafter referred to as "the Lee patent"), in view of U.S. Patent No. 4,882,524 (hereafter referred to as "the Hermann patent"), and in view of U.S. Patent No. 5,982,067 (hereafter referred to as "the Sebastian patent"). The applicant respectfully requests that the Examiner reconsider and withdraw this ground of rejection in view of the following.

Independent claim 1 is not rendered obvious by the Lee, Herman and Sebastian patents because these patents, either taken alone or in combination, fail to teach or suggest (1) a constant-power brushless DC motor, and (2) a stator wound in parallel by phases and polarities, each of the winding coils of the stator not connected with one another. Claim 1 is reprinted below with the above-identified distinguishing features depicted in bold typeface:



A constant-power brushless DC
motor, comprising:
a stator wound in parallel by
phases and polarities and
configured of n multi-phases, each

of the winding coils of the stator which are not connected with one another is connected to each of n full H-bridges, n full H-bridges are connected to a DC power supply in parallel;

a rotor having a predetermined number of polarities, which is required to concentrate magnetic flux on excitation area;

a commutation encoder including sensing regions and nonsensing regions, the commutation encoder being externally set to one side of the shaft of the rotor; and

two photo sensors set to each phase, the two photo sensors being connected to a half H-bridge of each phase, to switch the half H-bridge on and off, wherein the width of each of the sensing regions of the commutator encoder is determined to allow a phases among n phases to be excited constantly, the a photo sensors recognizing the corresponding phases excited. [Emphasis added.]

Furthermore, one of ordinary skill in the art would not have been motivated to combine and modify the references as proposed by the Examiner. } ✓

Claim 1 is not rendered obvious by the Lee, Hermann and Sebastian patents because these patents neither teach, nor suggest, a constant-power brushless DC motor. The Examiner cites the Hermann patent as disclosing a motor able to produce a constant torque, citing column 3, lines 12 and 13. However, this section merely states that, "a hysteresis motor theoretically exhibits a torque-speed characteristic with a constant torque up to full

Preamble not in reference??

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synchronization. [Emphasis added.]". This general statement about theoretical possibilities of hysteresis motors is not a disclosure of an actual characteristic of the motor described in the Hermann patent, let alone a motor produced by the amalgam of teachings selected from the Lee, Hermann and Sebastian patents by the Examiner. The Examiner does not rely on the Lee and Sebastian patents for this teaching. Accordingly, claim 1 is not rendered obvious by the Lee, Hermann and Sebastian patents for at least this reason. Since claims 2 and 8 depend from claim 1, they are similarly not rendered obvious by the Lee, Hermann and Sebastian patents. } ✓

Further, Claim 1 is not rendered obvious by the Lee, Hermann and Sebastian patents because these patents neither teach, nor suggest, a stator wound in parallel by phases and polarities, each of the winding coils of the stator not connected with one another. Citing, Fig. 5, and column 4, lines 5-7, of the Sebastian patent, the Examiner argues that the Sebastian discloses a brushless DC motor with the coils connected in parallel. (See Paper No. 15, page 3.) However, the coils of a brushless DC motor connected in parallel proposed in the Sebastian patent are connected together in a "Y" configuration. (See Fig. 5 and column 4, lines 1-3.) More specifically at least three of the phases are interconnected. In contrast, as recited in claim 1, the phases are independently wound in parallel without the interconnection. (See page 7, lines 15-18.) } ✓

The Examiner does not rely on the Lee and Hermann patents for this teaching. Accordingly, claim 1 is not rendered obvious by the Lee, Hermann and Sebastian patents for at least this reason. Since claims 2 and 8 depend from claim } ✓

1, they are similarly not rendered obvious by the Lee, Hermann and Sebastian patents.

Dependant claim 2 is not rendered obvious by the Lee, Hermann and Sebastian patents because these patents, either taken alone or in combination, fail to teach or suggest narrow slots for the purpose of removing cancel elimination effect. Claim 2 is reprinted below with the above-identified distinguishing features depicted in bold typeface:

The motor as claimed in claim
1, wherein **the stator has narrow
slots to remove cancel phenomenon.**
[Emphasis added.]

The Examiner references column 1, lines 60-64 of the Herman patent as disclosing narrow slots for the purpose of suppressing harmonics of flux density. (See, Paper No. 15, page 3.) First, the cited portion of the Hermann patent refers to "closed slots", not "narrow slots" as claimed. Further, this highly selective citation of the Hermann patent is taken out of context. By doing so, the Examiner fails to consider the Hermann patent as a whole, including portions arguing against or teaching away from the claimed invention. This is improper. See, e.g., Bausch & Lomb, Inc. v. Barnes-Hind/Hydrocurve, Inc., 230 U.S.P.Q. 416 (Fed. Cir. 1986), cert. denied, 484 U.S. 823 (1987), on remand, 10 U.S.P.Q.2d 1929 (N.D. Cal. 1989). The teachings of the Hermann patent, considered as a whole, are more fully appreciated when the portions of the Hermann patent surrounding lines 60-64 of column 1 are considered. More specifically, the Hermann patent states:

... it is not possible for hysteresis motors to reduce the slot harmonics somewhat by closed stator slots or to substantially suppress them. The increase in the primary stray reactance resulting [from] closed stator slots would, in any case, be more annoying with hysteresis motors than with induction motors since the power factor of the former type of motor is worse than that of the latter. It should be added that even with closed slots, the stator teeth stand as equipotential surfaces before the rotor and thus cause a drop in the air gap flux density above the teeth at the points of higher longitudinal field strength H_L , which drop is greater than that occurring with purely sinusoidal primary stator current distribution ratio without slots, since in this case the stator and rotor potentials are in balance and differ only to the extent that the potential required for the sinusoidal air gap flux remains therebetween. It is possible by means of closed slots to suppress the slot harmonics of the air gap flux density distribution about the poles of the stator flux, which slot harmonics are produced by the differences of the magnetic air gap resistance at the teeth and in the gaps between the teeth. **However, it is not possible in this manner to avoid the slot harmonics of the magnetic stator potential which increase stepwise at the points of high flux through the slots at the gaps between the teeth.** [Emphasis added.]

Column 1, lines 44-68. Thus, the Hermann patent teaches away from the using closed slots. In any event, as noted above, "closed slots" aren't the same as "narrow slots" as recited in claim 2. The Examiner does not rely on the Lee and Sebastian patents for this teaching. Accordingly,


claim 2 is not rendered obvious by the Lee, Hermann and Sebastian patents for at least this reason.

Conclusion

In view of the foregoing amendments and remarks, the applicant respectfully submits that the pending claims are in condition for allowance. Accordingly, the applicant requests that the Examiner pass this application to issue.

Respectfully submitted,

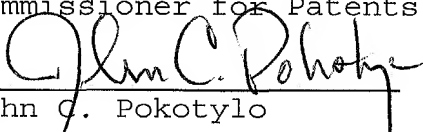
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I hereby certify that this correspondence is being deposited on **November 20, 2002** with the United States Postal Service as first class mail, with sufficient postage, in an envelope addressed to the Assistant Commissioner for Patents, Washington, D.C. 20231.


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